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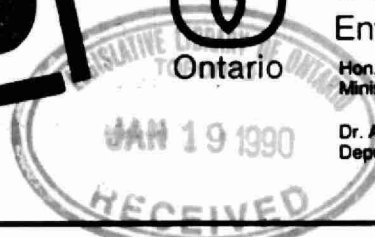


Ontario

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ALTERNATIVES TO CHEMICAL CONTROL OF AQUATIC WEEDS

Many of Ontario's lakes support an over-abundance of aquatic vegetation which inhibits the full recreational use of these bodies of water. The traditional solution to the problem has been the use of aquatic herbicides to control the unwanted vegetation. The increasing cost of these chemicals, and the concern over their unknown long-term environmental effects, is encouraging the selection of alternatives to the use of chemical control. Currently there are a number of alternatives that might be considered, including:

- Water soluble dyes
- Flocculating agents
- Surface films
- Fibreglass screens
- Aquatic harvesting
- Substrate alteration

Water Soluble Dyes

Water soluble dyes limit the growth of algae and vascular plants by screening out specific wave lengths of sunlight.

Aquashade, the only water soluble dye registered for this use in Canada, imparts a deep blue colour to the water. This product is recommended for use in fountains, water cooling towers, tanks, and enclosed ponds. Aquashade appears to be relatively successful in the control of algae in applications such as golf course ponds. The blue colour given to the water lasts only for a relatively short time (1-2 weeks), therefore, multiple treatments may be necessary.

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The limitations of this alternative are that it is registered for use only in closed systems and is most effective when used in small areas. A permit is required for its purchase as it is a Schedule 2 product.

Flocculation

Flocculation or polishing is often used to remove algae and suspended solids in sewage lagoons before releasing the contents into a receiving water. This method of algae control has been investigated for application in ponds and other enclosed aquatic systems. The technique involves the use of a flocculating agent, such as lime or alum, which binds algae and suspended debris to itself, depositing them out of the water column.

The limitations of this alternative are that it must be performed in a closed system. To initiate flocculation the pH has to be quite high (i.e. 11.0), which requires the input of large amounts of the flocculating agent.

Surface Films

Surface films, usually black plastic, prevent light reaching aquatic plants and thus limit their growth.

The method of application is to anchor a sheet of black plastic over the weeds; since it is positively buoyant it floats above the weeds. Aquatic plants take from 2-3 weeks to die-off as a result of the lack of sunlight.

The limitations of this alternative are mainly physical in nature in that very large sheets of plastic are difficult to manipulate and the treatment area is restricted to the size of the plastic sheet available. Also because the plastic floats below the surface of the water it can be difficult to see and therefore might present a boating hazard if not well marked.

Fibreglass Screen

Fibreglass screen impairs the growth of aquatic weeds by reducing the amount of sunlight reaching the plants.

The advantages of this product over surface films is that it sinks which makes it easy to install, and it does not interfere with boat traffic. "Aquascreen" may be left in the water year round, but it does require some maintenance, (e.g. removing any silt or organic matter that has settled on top of the screen).

Its limitation is that it is relatively expensive (\$300 per 2 m x 30 m roll). It is, therefore, best used in small areas such as boatslips, and swimming beaches.

A less expensive product, plastic screen, has been tested and seems to be as effective as fibreglass screen. However, it has similar limitations, with the additional problem of positive buoyancy which makes installation difficult.

Aquatic Harvesting

Aquatic harvesting involves the mechanical removal of aquatic weeds usually by means of a submerged cutting bar and conveyor loading system. The main advantage of harvesting is that it removes both the plants and their contained nutrients from an aquatic system. There are a number of harvesting systems on the market ranging from \$7,000 - \$70,000. The larger harvesters are more efficient in open areas, whereas the smaller machines are designed for operation in the near-shore areas. Custom harvesters rates vary according to the size of the area, the distance travelled, etc. Aquatic weeds may have to be harvested more than once in a season.

The limitations of aquatic harvesting of aquatic weeds are that it is still relatively more expensive than chemical control on a per hectare basis. Disposal of the cut material also presents a problem, as trucking the weeds away increases the overall costs of harvesting.

Currently, most operators of custom harvesting equipment leave the disposal of cut weeds to the property owner.

Subject to the development of large-scale harvesting projects, cut weeds may eventually be used for animal feed, fibre and protein production, and for composting.

Substrate Alteration

Substrate alteration is a method of aquatic weed control which involves the alteration or removal of the substrate (or growing medium) of aquatic plants. Often siltation and deposition of organic material in aquatic systems provides ideal growth medium for weeds. The removal of the nutrient-rich substrate limits the growth of aquatic weeds.

Dredging is the mechanical removal of substrate. This can be done with either dragline type machinery or suction dredges. The advantage of this alternative is that it provides for long-term control of weeds. The limitations are the expense of operating these types of machines, and the problems associated with disposal of spoils which sometimes contain contaminants such as heavy metals and pesticides.

Substrate may also be altered by means such as covering with sand, which blankets the nutrient-rich substrate and makes it unavailable for plant growth. The limitation of this technique is one of cost, since trucking of sand is expensive. A permit usually is required from the Ministry of Natural Resources before substrate alteration may be undertaken.